



**UNITED STATES DEPARTMENT OF COMMERCE**  
**Patent and Trademark Office**

Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

AS

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
-----------------	-------------	----------------------	---------------------

08/996,367    12/22/97    AHLGREN    K    41939-09

W R GRACE & CO.-CONN  
P O BOX 464  
DUNCAN SC 29334

IM22/0117

EXAMINER

TARAZANO, D

ART UNIT

PAPER NUMBER

1773

16

DATE MAILED:

01/17/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

# Office Action Summary

Application No.  
**08/996,367**

Applicant(s)  
**Ahlgren et al.**

Examiner  
**D. Lawrence Tarazano**

Group Art Unit  
**1773**



☒ Responsive to communication(s) filed on Oct 26, 2000

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

## Disposition of Claims

☒ Claim(s) 1-64 is/are pending in the application.

Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

☐ Claim(s) \_\_\_\_\_ is/are allowed.

☒ Claim(s) 1-64 is/are rejected.

☐ Claim(s) \_\_\_\_\_ is/are objected to.

☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.

## Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been  
☐ received.

☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

☐ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). \_\_\_\_\_

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

Art Unit: 1773

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claim 64 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. While the applicants have an examples which have various impact strengths, these values do not support the open ended range of "at least 56 lbs".

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

Art Unit: 1773

4. Claims 1-5, 8, 9, 13, 14, 15, 36, 41, 42, 57, 60, 61, and 63 are rejected under 35 U.S.C. 102(e) as being anticipated by Ralph (5,272,016).

Ralph teaches shrinkable three layer films comprising a core layer and surface layers comprising a blend of:

a) VLDPE (Dow XU61520.01, a heterogeneous ethylene/ alpha-olefin copolymer having a density of 0.912), corresponding to the claimed heterogenous copolymer having a density of above about 0.90 g/cc;

b) a Plastomer (Tafmer A 4085, an ethylene copolymer having a density of 0.88 g/cc) corresponding to the claimed heterogeneous copolymer having a density of less than about 0.90 g/cc); and

c) a homogeneous ethylene / butene copolymer having a density of 0.900 g/cc (EXACT 3010C), ( see examples 4, 25 and 26). Ralph further teaches that materials having a value of about 0.900 g/cc are useful (claim 27). This copolymer corresponds to the claimed homogeneous component having a density of at least 0.901 g/cc. The density value of 0.900 g/cc taught in the prior art is within experimental error of the claimed value of greater than 0.901 g/cc; they are only 0.001 apart from each other. Furthermore, the claimed value falls within the “**about 0.900 g/cc**” taught in the prior art.

Regarding the limitation that the films are cooled by water during formations, this is a process limitation. There is nothing on the record and no recognition in the applicants specification that a film formed by this process would be different in structure from a heat shrinkable film made by any other

Art Unit: 1773

method; (page 10, starting at the last paragraph of the specification) all methods would appear to produce the same product.

For these reasons, the claimed films are clearly envisaged by Ralph.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5, 7-15, 36, 42, and 56-64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ralph 5,272,016.

Ralph as discussed above teaches a multi layer biaxially oriented shrink film comprising homogeneous polyolefins (EXACT, a metallocene catalyzed ethylene/butene copolymer available from Exxon, (column 22, line 45; Certificate of Correction)). These are the same types of polymers used by the applicants.

While Ralph does not teach examples of films having a density of greater than "about 0.901 g/cc", the claimed densities would overlap the "about .900 g/cc" taught by Ralph.

Furthermore, there does not appear to be any distinction in the behavior of a films having a resin having a density of greater than about "0.901 g/cc" and films having a density in the range of about "0.900 g/cc" the numbers are so close, they overlap. In any event these differences in

Art Unit: 1773

density would be minor obvious variations and would be expected to have the same general properties. *See Titanium Metals Corporation vs Banner*, 778 F. d. 775, 227 USPQ 773 (Fed. Cir. 1985).

Furthermore, the subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made, since it has been held that choosing the overlapping portion, of the range taught in the prior art and the range claimed by the applicant, has been held to be a *prima facie* case of obviousness, see *In re Malagari*, 182 USPQ 549.

Finally, it has been held that a range of "more than 5%" would overlap a disclosure of 1-5%, *In re Wertheim*, 541 F. d. 257, 191 USPQ (CCPA 1976), *In re Woodruff*, 919 F.d. 1575, 16 USPQ2d. 1934 (Fed. Cir. 1990).

Regarding claim 8, while Ralph describes VLDPE materials as being copolymers of ethylene and an alpha-olefin. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have also used homopolymers for this component as long as the density requirements set forth in Ralph were met.

Regarding claims 10, 11, 58 and 59, Ralph teaches that VLDPE is a copolymer of ethylene; and butene, hexene, or octene (column 4, lines 35+). The specific homogeneous linear ethylene copolymer EXACT resin used by Ralph, is an ethylene / butene copolymer. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have used homogeneous linear single site catalyzed ethylene copolymers having hexene or octene comonomers

Art Unit: 1773

in the films taught by Ralph since this is merely the substitution of one comonomer for another, in which each of these alpha olefins have the same function.

Regarding claims 15 and 62 second surface layer can be considered an inner layer in view of the applicants structures in the examples.

Regarding claim 64, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have increased or decreased the thickness of the films depending on the impact strength of the film desired since the thickness of the film would affect this parameter.

6. Claims 43-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ralph 5,272,016 in view of the applicants' admissions page 10, paragraph 3.

Ralph, as discussed above, teach oriented films; however, he is silent regarding some of the processing conditions under which orientation occurs. However, the applicants state on page 10 that orientation methods are well known to those skilled in the art, including using cascading water cooling means.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used conventional orientation methods of the types discussed by the applicants as being well know to those in the art in order to produce the shrinkable films taught by Ralph.

Regarding claims 53 and 54, the films are irradiated before or after biaxial orientation as claimed.

Art Unit: 1773

Regarding claims 50-52, determining the optimal temperature of orientation is well within the skill of the art since this feature relates to the temperature of crystallization of the resins in the polymer film (column 2, lines 1+). The films taught by Ralph shrink at a temperature of 90 °C. While the orientation temperature is not specified, the orientation must have taken place at a temperature near 90 °C such that shrinkage would occur at that temperature since the temperature of orientation is related to the temperature at which shrinkage occurs. In any event, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have optimized the orientation temperature of the films taught by Ralph depending on the crystallinity of the polymers used.

7. Claims 1, 2, 3, 5, 6, 8-13, 36, 42-49, 53, 56, and 57-64 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Schoenberg (4,551,380) in view of Schut "Enter a new Generation of Polyolefins" Nov. 1991 Plastics Technology and Van der Sanden et al. "EXACT Linear Polymers of Enhanced Sealing Performance" ANTEC 1992 and applicants' admissions on page 10+ regarding conventional methods of film orientation.

Schoenberg teaches a heat sealable shrinkable symmetric three layer laminate film comprising a core of linear low density polyethylene (density about 0.90 g/cc) bounded by two surface layers (column 1, line 6). The surface layers comprise a blend of: (1) linear low density polyethylene (LLDPE), (2) a linear medium density polyethylene, and (3) an ethylene/vinyl acetate copolymer (Claim 3). The LLDPE used has a density about 0.900 to 0.925 g/cm<sup>3</sup> (column 8, lines 45-50).



Art Unit: 1773

Furthermore, the film can be cross linked by irradiation (column 15, line 5+) and orientation of the film can occur using conventional methods such as tenter framing and double bubble methods (column 2, lines 1-18). However, Schoenberg does not teach the use of polyolefins produced using a single site metallocene catalyst.

Schut teaches in a trade journal article that Exxon is producing a new line of linear low density polyolefins made using homogeneous single site metallocene catalysts, wherein said polyolefins have a density of at least 0.90 g/cc. Schut also teaches that these polymers would be used in blends or multi-layer films. These polyolefins have physical characteristics far superior to traditional polyolefins produced from Ziegler / Natta catalysis. For example: metallocene catalyzed polyolefins have lower heat-seal initiation temperatures, higher strength (Dart impact results), and better clarity. The superior attributes of these metallocene catalyzed polyolefins are further elaborated in Van der Sanden et al; and they further teach that these polyolefins are a choice material in the production of heat sealable films. Finally it should be noted that metallocene catalyzed polyolefins (1-butene or 1-hexene / ethylene copolymers) are commercially available from Exxon in the form of "EXACT" and ethylene / octene copolymers produced by metallocene catalysis would also fall within this class of materials.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used commercially available metallocene catalyzed LLDPE of the type taught by Schut and Van der Sanden et al. in the laminate structure of Schoenberg in order to produce clear puncture resistant films with improved sealability and strength.

Art Unit: 1773

Regarding claims 42-49, 53, and 56, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have produced the films taught by Schoenberg using conventional art recognized orientation methods since Schoenberg recognizes that various conventional methods would be useful. That would include the use of water cooling means, stated by the applicants as being conventional methods used in the production of heat shrinkable films

8. Claims 1, 2, 12, 13, 18-41 and 56 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Evert et al. (5,055,328) in view of Schut "Enter a new Generation of Polyolefins" Nov. 1991 Plastics Technology and Van der Sanden et al. "Exact Linear Polymers of Enhanced Sealing Performance" ANTEC 1992.

Evert et al. teach a multi layer cross linked laminate film comprising a core sandwiched between an inner layer and an outer layer. The heat sealable inner and outer layers comprise (column 7, line 1+; column 8, line 62+) a blend of at least 50% EVA and other suitable polymers and copolymers including  $\alpha$ -olefins such as LLDPE and VLDPE. The heat sealable layer may also comprise polypropylene, ethylene-polypropylene copolymer, or an ionomer (neutralized ethylene-acrylic acid polymer).

The core (column 8, line 29) can comprise nylon, hydrolyzed ethylene/vinyl acetate copolymer, vinylidene chloride/vinyl chloride copolymer, or vinylidene chloride/methyl acrylate copolymer, but the vinylidene chloride/vinyl chloride copolymer is not a preferred material because it discolors during irradiation treatment. These films are shrinkable at 90 °C, and as discussed above

Art Unit: 1773

it is reasonable to believe that these films have been oriented at a temperature near 90° C. The films have also been oriented using a double bubble method and irradiated following the orientation step (column 10, lines 18+). They also teach in the background of the invention that multilayer films can be produced by lamination or extrusion coating, but these methods require additional steps (column 2, lines 50+). However, Evert et al. does not specify the use of LLDPE produced by metallocene.

As discussed above Van der Sanden et al. and Schut teach that commercially available metallocene catalyzed LLDPE have physical properties far superior to those of analogous LLDPE formed by Ziegler-Natta catalysis.

Nevertheless, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used commercially available metallocene catalyzed LLDPE as discussed by Van der Sanden and Schut in the laminate structure of Evert et al. in order to produce clear films with superior strength and improved heat sealability.

9. Claims 1, 2, 12-15, 18-22, 23-27, 28-31, 33-41 are rejected under 35 U.S.C. § 103 as being unpatentable over Newsome et al. (4,457,960) in view of in view of Schut "Enter a new Generation of Polyolefins" Nov. 1991 Plastics Technology and Van der Sanden et al. "Exact Linear Polymers of Enhanced Sealing Performance" ANTEC 1992.

Newsome et al. teach multi layer films comprising a barrier layer. The film structure can have both three layer and five layer embodiments; wherein the five layer structure can be either symmetrical

Art Unit: 1773

or asymmetrical (Examples of the laminate structure: column 7, line 64+), and the films must be strong and abuse resistant. The films can also comprise LLDPE which can compose the core, the inner layers, or the outer layers of the films either as a separate layer or as a blend depending on the embodiment. The barrier layer can be either ethylene/vinyl alcohol or saran. However, Newsome et al. do not teach the use of metallocene catalyzed LLDPE.

As discussed above Van der Sanden et al. and Schut teach that commercially available metallocene catalyzed LLDPE have physical properties far superior to that of analogous LLDPE formed by Ziegler-Natta catalysis. Furthermore, Schut teaches that EXXPOL EXACT-101 has a total impact strength of 107 in.-lb.

It would have been obvious to one of ordinary skill in the art at the time of invention was made to have used commercially available metallocene catalyzed LLDPE of the type taught by Van der Sanden et al. and Schut in the laminate structure of Newsome in order to produce films with superior strength and performance.

10. Claims 1, 3, 4, 5, 6, 12, 14, 28, 35, 42, and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilhoit (5,403,448).

Wilhoit teach that blends of VLDPE, EVA, and a plastomer are used to produce heat shrinkable single and multi-layer films. These films are biaxially oriented as by double bubble biaxial orientation in which irradiation to achieve cross linking is done following biaxial orientation (column

Art Unit: 1773

11, lines 50+). The homogeneous plastomer has a density of below about 0.900 g/cc and a molecular weight distribution of less than 3; (table on column 5) this would correspond to the claimed linear homogeneous polymer. These materials are made by Mitusi using a single site vanadium catalyst and have homogeneous not heterogeneous properties.

The VLDPE polymers used are heterogeneous in nature (table column 5), having molecular weight distributions above about three and having at least two melting points. Examples of VLDPE polymers recited have densities of both less and greater than about 0.90 g/cc as claimed (Table C).

The essential difference between what is claimed and what is taught by Wilhoit is the specific use of homogeneous linear polymer (plastomer) having a density of greater than about 0.901 g/cc. However, the claimed ranges overlap that taught by Wilhoit because both the prior art and the applicants use the term about which gives enough latitude to the densities of the homogeneous polymer to have overlapping values. Accordingly, the subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made, since it has been held that choosing the overlapping portion, of the range taught in the prior art and the range claimed by the applicant, has been held to be a *prima facie* case of obviousness, see *In re Malagari*, 182 USPQ 549. Furthermore, it has been held that a range of "more than 5%" would overlap a disclosure of 1-5%, *In re Wertheim*, 541 F. d. 257, 191 USPQ (CCPA 1976), *In re Woodruff*, 919 F.d. 1575, 16 USPQ2d. 1934 (Fed. Cir. 1990).

Art Unit: 1773

11. Claim 1, 2, 6-11, 15-17, 42, and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mueller et al. (4,532,189) in view Schut "Enter a new Generation of Polyolefins" Nov. 1991 Plastics Technology and Van der Sanden et al. "Exact Linear Polymers of Enhanced Sealing Performance" ANTEC 1992.

Mueller et al. teach heat shrinkable multi-layer films comprising LLDPE wherein DOWLEX 2054 is a commercially available LLDPE (examples I, II, and III). Moreover, example II shows LLDPE blended with ethylene vinyl acetate used in the core layer of a multilayer film. Furthermore, these films have improved optical properties (column 1, lines 13+). The core layer can also comprise a blend of LLDPE and LDPE, (an example of a homopolymer)(column 5, lines 22; column 3, line 54). These films are also used in shrink/ heat seal applications (column 2, lines 5+).

However, they are silent regarding the use of homogeneous linear polymers having a density of greater than about 0.901 g/cc.

Schut teaches in a trade journal article that Exxon is producing a new line of linear low density polyolefins made using homogeneous single site metallocene catalysts, wherein said polyolefins have a density of at least 0.90 g/cc. These polyolefins have physical characteristics far superior to traditional polyolefins produced from Ziegler / Natta catalysis. For example: metallocene catalyzed polyolefins have lower heat-seal initiation temperatures, higher strength (Dart impact results), and better clarity. The superior attributes of these metallocene catalyzed polyolefins are further elaborated in Van der Sanden et al., and they further teach that these polyolefins are a choice material in the production of heat sealable films. Finally it should be noted that metallocene catalyzed

Art Unit: 1773

polyolefins (1-butene, 1-hexene, or 1-octene/ethylene copolymers) are commercially available from Exxon in the form of "EXACT."

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used commercially available metallocene catalyzed LLDPE of the type taught by Schut and Van der Sanden et al. in the surface layers or the core layer of the laminate structure of Mueller in order to produce clear puncture resistant films with improved strength and in the case of the surface layer, improved heat sealing properties.

### *Response to Arguments*

12. Applicant's arguments filed 10-26-2000 have been fully considered but they are not fully persuasive.

The applicants added the limitation that the films are cooled by cascading water. This does not appear to be a patentable distinction. There is nothing on the record to establish any criticality to this method. The applicants state on page 10 that the films of their invention can be made by various conventional methods. Thus, there is no recognition in the specification that the cascading water method results in a materially different and non-obvious product or that the method itself is special. For example, films can also be formed into a platen and then oriented by tenter framing (examples 1-10).

The applicants' arguments regarding the melt strength of the polymers is not convincing for the following reasons. First, these are merely attorney arguments. Second, the method claims are

Art Unit: 1773

not limited to films produced by a downward casting method. Third, arguments seem to contradict the specification (page 10) which indicates that no particular methods are needed, and there is no mention of melt strength. Also, the prior art, Ralph, uses the EXACT resins as minor component in blends so the melt strength issue is diminished by the presence of other ethylene resins.

The examiner suggests that the applicants considered submitting declarations showing evidence to support their position. The claims also need to be commensurate with any show or evidence provided.

Regarding the now claimed density value of at least 0.901 g/cc: The applicants have not established any criticality regarding this value over the 0.900 g/cc value taught in the Ralph.

The applicants have argued that the materials produced by Exxon do not lend themselves to the production of mono-layer films because of melt strength considerations. However, the applicants' claims are not limited to monolayer films consisting of the homogeneous linear ethylene polymer. Shut teaches that initial uses of these materials would be layers and blends (page 17, column 3). The applicants claims are directed to films which are either multilayer in nature or open to the presence of other polymers or layers. Thus, the applicants' arguments with respect to melt strength are commensurate with what is already recognized by the prior art.

The applicants argue that Shut and Van der Sanden do not recognize that homogeneous polymers are specifically useful in shrink film applications; however, Shut and Van der Sanden do teach that they are useful in the production film and would be useful in blend and in multilayer films. Newsome (4,457,960), Schoenberg (4,551,380), Evert et al. (5,055,328) and Mueller (4,532,189)



Art Unit: 1773

all teach multilayer films which have shrinkable properties and the motivation to combine is based on the fact that each of these primary references teaches multilayer films and blend.

The applicants' arguments with respect to increased shrink properties is not persuasive. It is recognized in the art when comparing two polymers having the same density one made by Ziegler / Natta and one made by a single site catalysis (EXACT) (Enter a New Generation of Polyolefins, Shut, table 1), the homogeneous polymer made by single site catalysis will have a lower melting point. The film made from the homogeneous polymer would inherently have a higher degree of shrinkage. The material can be oriented at a lower temperature which results in a greater degree of shrinkability at the same temperature because of this increased temperature differential; See also Ralph (5,272,016) which discusses orientation temperatures (column 2, paragraph 1).

The applicants state that they have improved impact strength in structures having homogeneous polymers. However, the examiner takes the position that this is not unexpected since Shut (page 15) teach that films made from the EXACT resins have improve impact properties over those made of polymers made by conventional Ziegler-Natta catalysis.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to D. Lawrence Tarazano whose telephone number is (703) 308-2379. The examiner can normally be reached on M-F from 8:30 am to 5:30 pm.

Application/Control Number: 08/996,367

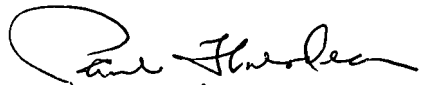
Page 17

Art Unit: 1773

The official fax number for the art unit is (703)-305-3599. The special fax number for amendments after final is (703)-305-5408. The number for unofficial faxes is (703)-305-5436.

D. Lawrence Tarazano  
Patent Examiner

January 12, 2001



**Paul Thibodeau**  
Supervisory Patent Examiner  
Technology Center 1700